

### INTERVIEW SUMMARY

The Applicant thanks Examiner Paul for the generosity of extending the undersigned attorney a telephone interview on May 9 and 14, 2008. During the course of the interview Dependent claim 2 was discussed.

### REMARKS

As a preliminary matter, the Applicant notes that due to a typographical error in the Preliminary Amendment filed on December 29, 2005, the filed claims inadvertently omitted claim number 14 (e.g., the claims skipped from claim 13 to claim 15) and accidentally listed the regularization parameter of claims 2 and 3 as "p" instead of " $\mu$ ," as listed in the originally filed claims. Appropriate amendments are made herewith to correct these typographical errors.

#### **I. Claims 1-6, 9, 18-23: 35 USC § 103**

Claims 1-6, 9, and 18-23 are directed to a handsfree system for use in a vehicle. The system comprises a microphone with at least two microphones and a signal processing means where the signal processing means comprises a regularized superdirective beamformer with fixed superdirective filters. The regularized superdirective beamformer is configured to use a finite regularized parameter  $\mu$  that is frequency dependent.

The proposed combination of U.S. Patent No. 6,594,367 to Marash et al. ("*Marash*") and U.S. Patent No. 6,748,088 to Schaaf ("*Schaaf*") discloses a super directional beamforming design for operation in a motor vehicle. However the proposed combination does not disclose the use of a regularized superdirective beamformer or a finite regularization parameter  $\mu$  that is frequency dependent. The pending Office Action cites to *Marash* col. 7, ll. 30-45 and col. 10, ll. 1-5 as disclosing a regularized superdirective beamforming using a finite regularization parameter, however the Applicant respectfully disagrees. Nothing in these cited sections disclose that the super directive beamformer of *Marash* is regularized let alone regularized by a finite parameter that is frequency dependent. In fact, the words "regularize," "regularized," and "regularization" appear nowhere in *Marash* or *Schaaf*.

Accordingly, the Applicant respectfully asserts that the combination of *Marash* and *Schaaf* does not disclose all of the features of claim 1-6, 9, and 18-23. Therefore, the Applicant respectfully requests withdrawal of these rejections.

## **II. Claim 7: 35 USC § 103**

Claim 7 depends from base claim 1 and includes all of its features. U.S. Patent No. 5,569,619 to Abel ("*Abel*") discloses a three-dimensional virtual audio display employing reduced complexity imaging filters. In *Abel*, a set of transfer function parameters are generated in response to a spatial location or direction signal, and these parameters are used to filter an audio signal. See Abstract. However, *Abel* does not disclose the use of a regularized superdirective beamformer or a finite regularization parameter  $\mu$  that is frequency dependent. Therefore, for at least this reason, the combination of *Abel* with *Marash* and *Schaaf* still fails to disclose all of the features of claim 1, and therefore claim 7.

Accordingly, the Applicant respectfully requests withdrawal of this rejection.

## **III. Claim 8: 35 USC § 103**

Claim 8 depends from base claim 1 and includes all of its features. U.S. Patent No. 7,158,643 to Lavoie et al. ("*Lavoie*") discloses an auto-calibrating surround system. However, *Lavoie* does not disclose the use of a regularized superdirective beamformer and a finite regularization parameter  $\mu$  that is frequency dependent. For the reasons stated above in Section I, these features are also not disclosed by the combination on *Marash* and *Schaaf*.

Accordingly, the Applicant respectfully asserts that all of the features of claim 8 are not disclosed by the combination of *Marash*, *Schaaf*, and *Lavoie*. Therefore, the Applicant respectfully requests the withdrawal of this rejection.

## **IV. Claims 12-14: 35 USC § 103**

Claims 12-14 depend from base claim 1 and include all of its features. U.S. Published Patent Application No. 2003/0063759 to Brennan et al. ("*Brennan*") discloses a directional audio signal processing using an oversampled filterbank. The combination of *Brennan* with *Marash* and *Schaaf* fails to disclose all of the features of claim 12-14. As explained in Section I, *Marash* and *Schaaf* fail to disclose a handsfree system that includes disclose the use of a regularized superdirective beamformer and a finite regularization parameter  $\mu$  that is

frequency dependent. *Brennan* fails to fill the gaps left by *Marash* and *Schaaf*, and does not mention the words “regularization” or “susceptibility.”

Accordingly, the Applicant respectfully asserts that all of the features of claims 12-14 are not disclosed by the combination of *Marash*, *Schaaf*, and *Brennan*. Therefore, the Applicant respectfully requests the withdrawal of these rejections.

**V. Claims 16-17: 35 USC § 103**

Claims 16-17 depend from claim 1 and includes all of its features. U.S. Patent No. 4,696,043 to Iwahara et al. (“*Iwahara*”) discloses a microphone apparatus having a variable directivity pattern. The combination of *Iwahara* with *Marash* and *Schaaf* fails to disclose all of the features of claim 16-17. As explained in Section I, *Marash* and *Schaaf* fail to disclose a handsfree system that includes disclose the use of a regularized superdirective beamformer and a finite regularization parameter  $\mu$  that is frequency dependent. *Iwahara* fails to fill the gaps left by *Marash* and *Schaaf*, and does not mention the words “regularization” or “susceptibility.”

Accordingly, the Applicant respectfully asserts that all of the features of claims 16-17 are not disclosed by the combination of *Marash*, *Schaaf*, and *Iwahara*. Therefore, the Applicant respectfully requests the withdrawal of these rejections.

**VI. Claim 10: 35 USC § 103**

Claim 10 depends from claim 1 and includes all of its features. U.S. Patent No. 6,339,758 to Kanazawa et al. (“*Kanazawa*”) discloses a noise suppress processing apparatus and method. However, the combination of *Kanazawa* with *Marash* and *Schaaf* fails to disclose all of the features of claim 10. As explained in Section I, *Marash* and *Schaaf* fail to disclose a handsfree system that includes disclose the use of a regularized superdirective beamformer and a finite regularization parameter  $\mu$  that is frequency. *Kanazawa* fails to fill the gaps left by *Marash* and *Schaaf*, and does not mention the words “regularization” or “susceptibility.”

Accordingly, the Applicant respectfully asserts that all of the features of claims 16-17 are not disclosed by the combination of *Marash*, *Schaaf*, and *Iwahara*. Therefore, the Applicant respectfully requests the withdrawal of these rejections.

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**VII. Claim 11: 35 USC § 103**

Claim 11 depends from claim 1 and includes all of its features. As explained in Section I, *Marash* and *Schaaf* fail to disclose a handsfree system that includes the use of a regularized superdirective beamformer and a finite regularization parameter  $\mu$  that is frequency dependent.

Accordingly, the Applicant respectfully asserts that all of the features of claim 11 are not disclosed by the combination of *Marash* and *Schaaf*. Therefore, the Applicant respectfully requests the withdrawal of this rejection.

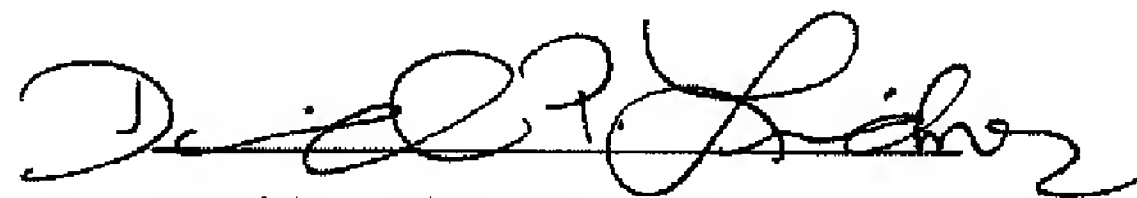
**VIII. New Claims 23-29**

The Applicant respectfully asserts that the features of new claims 23-29 are not disclosed by any of the cited references. Accordingly, the Applicant respectfully requests a Notice of Allowance.

**CONCLUSION**

In view of the foregoing remarks, the Applicant respectfully submits that pending claims 1-22 and new claims 23-29 are in condition for allowance, and respectfully requests a Notice of Allowance. The Examiner is invited to contact the attorney below if it will assist with the examination of this application.

Respectfully submitted,



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